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TalkSwitch VoIP

TALKSWITCH DOCUMENTATION

ADDING IP PHONES TO TALKSWITCH

RELEASE 6.12

CT.TS005.008101

talkswitch®

ANSWERS WITH INTELLIGENCE®

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INTRODUCTION

This guide describes how to configure an IP phone as a local extension. An IP phone can be internal (located in the office) or external (located outside the office).

SUPPORTED IP PHONES

We recommend TalkSwitch® IP phones and supported third-party IP phones for ease of configuration. TalkSwitch currently supports the following IP phones:

- TalkSwitch TS-9112i, TS-9133i, TS-350i, TS-480i and TS-550i
- TalkSwitch TS-850i cordless IP phone
- Polycom IP 301, IP 320, IP 330, IP 430, IP 501, IP 550, IP 601 and IP 650
- Grandstream GXP2000 and GXP2020
- Counterpath eyeBeam softphone

Visit **http://global.talkswitch.com** for information on which models are available in your region and useful resources such as quick reference cards, user guides and firmware files. To access the IP phone guides, choose **Start > Programs > TalkSwitch 6.12 > Documentation > IP Phone Guides**.

OVERVIEW

For each supported IP phone, this guide describes how to:

- Add the IP phone to the TalkSwitch system configuration.
- Configure the router, if setting up an external IP extension.
- Connect the IP phone to the network.
- Check and update the IP phone firmware version, if required.
- Program the IP phone.

Refer to *Adding Other IP Phones* on page 40 for configuration information of non-supported IP phones.

EXTERNAL IP EXTENSIONS

An external IP extension is an IP phone located outside the office that is configured as a local extension.

External IP extensions can be assigned to any VoIP-equipped TalkSwitch unit that can connect to the phone over a public or private network. See *Configuring the router* below. For additional information see *Connecting to a network* in the *VoIP Network Configuration Guide*.

All VoIP lines are shared by default. If necessary, you can reserve VoIP lines for external IP extensions. See *Reserving VoIP lines* in the *VoIP Network Configuration Guide*.

External IP extensions will use the preferred codec selected for the TalkSwitch profile. The default preferred codec is G.729. You can select a different preferred codec for the TalkSwitch profile. See *Setting code options* in the *VoIP Network Configuration Guide*.

Warning: Calls to an emergency service number using an external IP extension will not send the correct address to the emergency operator. We strongly recommend that you apply a warning label to any external IP extension stating:

If an emergency call is made from this phone, you must provide your address to the emergency operator.

Configuring the router

If you are setting up an external IP extension, you must ensure the router is configured. There should be no adjustments required for the firewall at the remote (phone) location.

The *Router Port Forwarding* area of the **IP Configuration** page displays the type of gateway device (i.e. the type of router), the IP address of the gateway (i.e. router), and whether router configuration is required.

A router is a gateway between the local area network and the Internet. Most routers have a firewall to block unwanted data from the Internet. For voice data to reach the TalkSwitch system through the firewall, port forwarding is required. Port forwarding allows the router to map ports to the IP addresses of the TalkSwitch units. Valid Internet data will use the ports to go through the firewall to the TalkSwitch units.

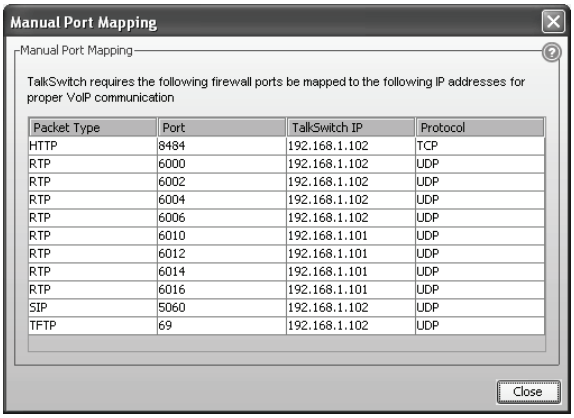
If you are setting up external IP extensions, a TalkSwitch VoIP network, or a VoIP service that doesn't handle port forwarding, port forwarding is required.

If port forwarding is required, and your router supports uPNP (Universal Plug and Play), ensure uPNP is enabled. The TalkSwitch system will use uPNP to automatically set up port forwarding, and the **Automatic (uPNP Enabled)** link will appear. No router configuration is required.

If port forwarding is required but your router doesn't support uPNP, or automatic port forwarding doesn't work, the **Manual Port Mapping Required** link will appear. You will need to configure the router as described below.

1. Select the **IP Configuration** page.

2. If required, click the **Manual Port Mapping Required** link. The **Manual Port Mapping** window appears. It lists the packet type, port number, IP address and protocol of each required port.


Manual Port Mapping
Manual Port Mapping
TalkSwitch requires the following firewall ports be mapped to the following IP addresses for proper VoIP communication
Packet Type | Port | TalkSwitch IP | Protocol
HTTP | 8484 | 192.168.1.102 | TCP
RTP | 6000 | 192.168.1.102 | UDP
RTP | 6002 | 192.168.1.102 | UDP
RTP | 6004 | 192.168.1.102 | UDP
RTP | 6006 | 192.168.1.102 | UDP
RTP | 6010 | 192.168.1.101 | UDP
RTP | 6012 | 192.168.1.101 | UDP
RTP | 6014 | 192.168.1.101 | UDP
RTP | 6016 | 192.168.1.101 | UDP
SIP | 5060 | 192.168.1.102 | UDP
TFTP | 69 | 192.168.1.102 | UDP
Close

3. To access the router configuration:

   a) Click the link containing the IP address of the gateway. The default browser starts, and prompts you for the router's user name and password.

   b) Enter the router's user name and password. The browser shows a setup screen.

   c) Navigate to the screen used to set up port forwarding. See your router documentation.

   d) Set up port forwarding using the information from the **Manual Port Mapping** window. See your router documentation for instructions on how to map ports. For information on configuring routers and mapping ports, visit **www.portforward.com/english/routers/port_forwarding/routerindex.htm**.

4. To check the status of each port through the firewall, click **Check Firewall**. The **Test Firewall** window appears.

5. Select the services you want to check.

6. Click **Test Ports**. The system will check the ports for the selected services.

Configuring the router manually

If you cannot access the router configuration through the **IP Configuration** page, configure the router manually.

1. Open the router configuration and navigate to the screen used to set up port forwarding. See your router documentation.
2. Map port 5060 (Type: UDP) to the TalkSwitch unit acting as local proxy. Port 5060 is the default port for forwarding SIP signaling data to the TalkSwitch system.

   If required, you can map a different port. In this case, enter the port in the *SIP signalling port* box of the **VoIP Settings** window.
3. Map the following ports (Type: UDP) to the TalkSwitch units. These RTP ports forward voice traffic to the TalkSwitch system by default.

VoIP Lines/Unit	Unit 1	Unit 2	Unit 3	Unit 4
4	6000–6006	6010–6016	6020–6026	6030–6036
8	6100–6114	6200–6214	6300–6314	6400–6414

   If required, you can map different ports. In this case enter the first port in the *Starting RTP port* box of the **VoIP Settings** window.
4. Map port 69 (Type: UDP) to the TalkSwitch unit acting as local proxy. Port 69 allows the TalkSwitch system to configure external IP extensions.
5. Map port 8484 (Type: TCP) to the TalkSwitch unit acting as local proxy. Port 8484 allows the TalkSwitch system to configure TalkSwitch IP phones as external IP extensions.
6. Map port 9393 (Type: TCP) to the TalkSwitch unit acting as local proxy. Port 9393 allows remote configuration of the TalkSwitch system.
7. If available, enable Quality of Service (QoS) to give voice traffic priority over data.

Save the configuration to the router.

CONFIGURING YOUR IP PHONE

ADDING TALKSWITCH TS-350i AND TS-550i IP PHONES

Connecting the TalkSwitch IP phone to the network

1. Connect a network cable between the LAN port on the phone (marked ◘) and your network (i.e. router or LAN connection). The TalkSwitch 350i and 550i IP phones also have a PC port. The PC port can be used to connect the PC to the network if only one network connection is available.

2. Connect power to the phone, either using the optional power adapter or an 802.3af Power-Over-Ethernet (POE) source.

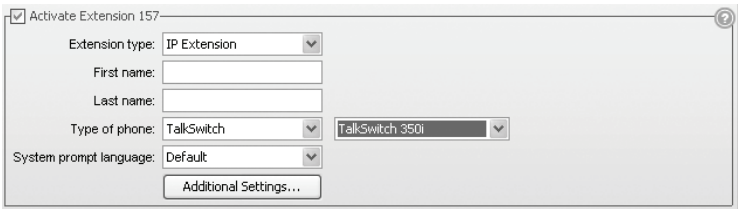
   If the phone is connected to the same network as the TalkSwitch system, and an extension has been configured with the phone's MAC address, the system will automatically register and configure the phone. When complete, the phone will display the extension name and extension number.

   If the phone is connected to the network and no extension has been configured with the phone's MAC address, the phone will bootup with the model number showing in the display.

Adding the extension to the TalkSwitch system

1. Launch the TalkSwitch management software.
2. Select the **Local Extensions/Fax** page.
3. Select an available extension number.
4. Select the *Extension* tab.

Activate extension area



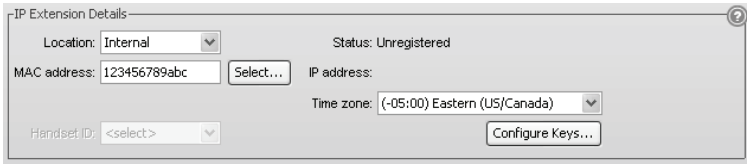
1. Ensure the *Activate extension* check box is selected.
2. If necessary, set the *Extension type* to *IP extension*.

3. Enter the user's *First name* and *Last name*. The names are used for caller ID, and appear within other pages of the TalkSwitch management software. The *Last name* is used with the dial-by-name directory.

4. If necessary, select *TalkSwitch* as the *Type of phone*, and then select the model.

5. Select the language for prompts heard by the user of the extension in the *System prompt language* list. Setting the prompt language will also change the language for text displayed on the phone itself.

IP extension details area



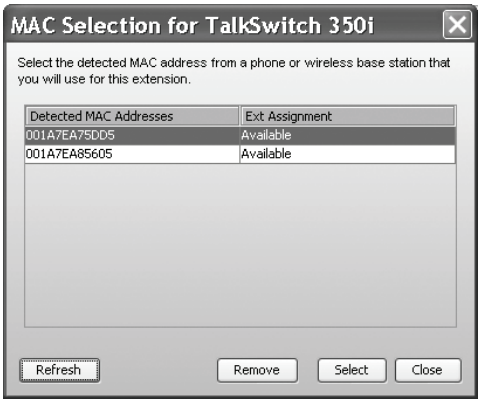
1. Set the *Location*. Choices are:
   - *Internal* — The phone is an internal IP extension located within the office, and is connected to the same LAN as the TalkSwitch unit.
   - *External* — The phone is an external IP extension located outside the office, and is connected to the TalkSwitch unit over the internet. See *External IP extensions* on page 2

Warning: Calls to an emergency service number using an external IP extension will not send the correct address to the emergency operator. We strongly recommend that you apply a warning label to any external IP extension stating:

If an emergency call is made from this phone, you must provide your address to the emergency operator.

2. If you set *Location* to *External*, select the *Time Zone* that matches the location of the IP phone.

3. Select the *MAC Address* of the phone:
   - You can select the *Phone MAC Address* from a list of automatically-detected phones connected to your LAN. To use this method:
     i) Click the **Select...** button. A **MAC Selection** window appears and lists TalkSwitch IP phones of the selected type.



     ii) Select the MAC address of the IP phone associated to the extension, and then click **Select**.

- You can enter the *Phone MAC Address* manually. This is the required method if you are setting up an external IP extension. The MAC Address is a 12-digit alphanumeric string located in the barcode on the bottom of the phone and the box the phone came in.

4. Choose **File > Save**. The system will create a configuration file that the phone will download when the phone is restarted.

About programmable function keys

The TS-350i has 6 programmable functions keys, and the TS-550i has 22 programmable keys. The keys allow the user to access TalkSwitch features, and to monitor and engage lines, extensions and queued calls (i.e. line appearance).

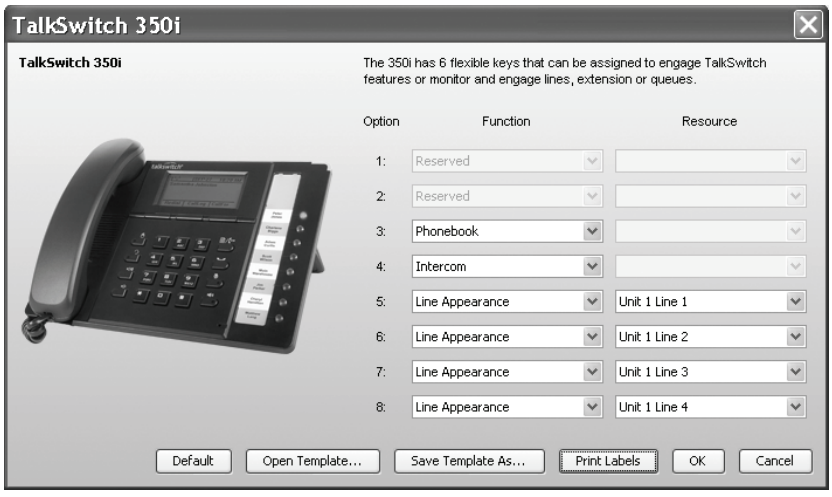
Note that the keys cannot be programmed if the extension has hot line access enabled. In this case, the phone will automatically connect the pre-configured resource (external number, extension etc.)

Programming TS-350i function keys

1. Click **Configure Keys**. This button is enabled if the *IP Extension Details* area is complete. The **TalkSwitch 350i** window appears.

2. For each key, select the *Function* and the *Resource* (if applicable). The function keys can be assigned for Line Appearance, Extension Appearance, Queue Appearance, Voicemail, Do Not Disturb (DND), Speed Dial, Park, Unpark, Call Pickup (any or specific extension), Overhead Page, Phone Book configuration, or User Defined (phone). For further details, click the Help icon in the *IP Extension Details* area..

3. Optionally, you can apply predefined key assignments from a template file using the **Open Template** button. See *Using a key assignment template* on page 8.



   If necessary, use the **Default** button to restore the keys to their default settings.

4. Use the **Print Labels** button to print a label showing the key configuration. Cut out the printed label and insert it in the phone next to the key lights.

5. Your key assignments can be saved as a template for programming additional phones. See *Saving a key assignment template* on page 8.

Saving a key assignment template

You can use the template file as a starting point for the key assignments for another extension. After setting up the key assignments:

1. Click **Save Template As** to save the key assignments to a template file. The **Save Template As** window appears.
2. Enter the filename of the template file, and then click **Save**.

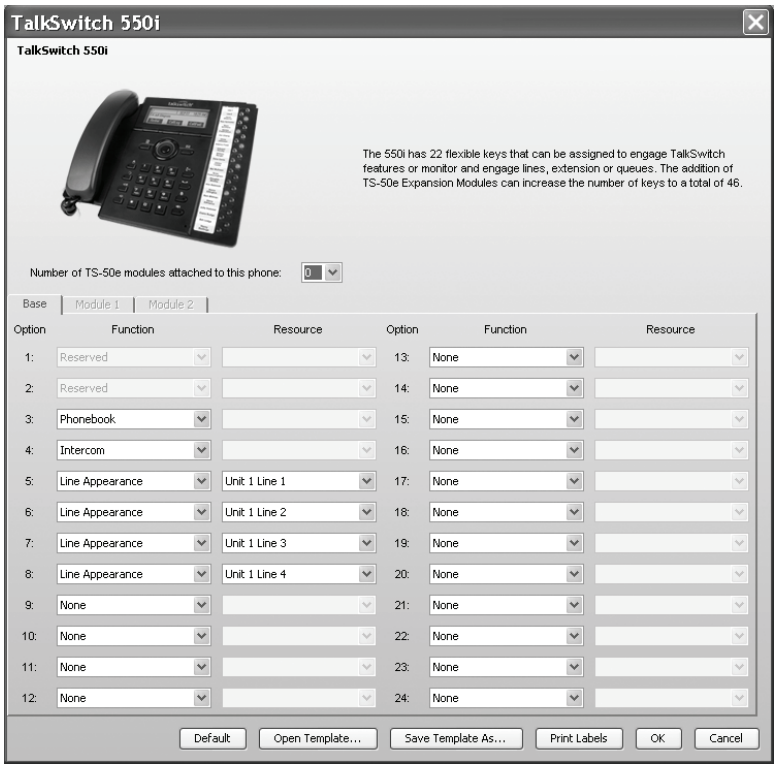
Using a key assignment template

1. To display the key assignments from a template file, click **Open Template**. The **Open Template** window appears.
2. Select the template file, and then click **Open Template**.

Programming TS-550i function keys

1. Click **Configure Keys**. This button is enabled if the *IP Extension Details* area is complete. The **TalkSwitch 550i** window appears.
2. Select up to 22 softkey options. For each option, select the *Function* and the *Resource* (if applicable). The function keys can be assigned for Line Appearance, Extension Appearance, Queue Appearance, Voicemail, Do Not Disturb (DND), Phone Book access, Speed Dial, Park, Unpark, Call Pickup (any or specific extension), Overhead Page, or User Defined (phone). For further details, click the Help icon in the *IP Extension Details* area.

   If the phone has TS-50e expansion modules installed, use the pull-down menu to select the number of modules installed. Select the tab associated to each module and configure the keys.
3. Optionally, you can apply predefined key assignments from a template file using the **Open Template** button. See *Using a key assignment template* on page 8.


TalkSwitch 550i
TalkSwitch 550i
The 550i has 22 flexible keys that can be assigned to engage TalkSwitch features or monitor and engage lines, extension or queues. The addition of TS-50e Expansion Modules can increase the number of keys to a total of 46.
Number of TS-50e modules attached to this phone:
Base
Module 1
Module 2
Option
Function
Resource
Default
Open Template...
Save Template As...
Print Labels
OK
Cancel

If necessary, use the **Default** button to restore the keys to their default settings.

4. Use the **Print Labels** button to print a label showing the key configuration. Cut out the printed label and insert it in the phone next to the key lights.
5. Your key assignments can be saved as a template for programming additional phones. See *Saving a key assignment template* on page 8.

Programming the TalkSwitchTS-350i or TS-550i IP phone as an external IP extension

If you are setting up an external IP extension, you must ensure there is a communication path over the network between your phone and your TalkSwitch systsem. See *Configuring the router* on page 2.

Program the following settings into the phone. On the phone:

1. Press the /••• button (TS-350i) / button (TS-550i).
2. Press **3** to enter the **Phone Settings** menu.
3. Press **7** to enter the **Firmware Update** menu.
4. Press **2** to enter the **TFTP Server Address** menu.
5. Use the keypad to enter the public IP address or FQDN of the TalkSwitch system, and then press the **OK** softkey.
6. Press the /••• button (TS-350i) / button (TS-550i) to exit the menu
7. The phone will request you reboot the phone. Press the **Yes** softkey to initiate the reboot. It should take no more than 1 minute for boot process to finish. During this process, the phone contacts the TalkSwitch unit, which automatically registers and configures the phone. When complete, the phone will display the extension name and extension number. The phone is now ready for use.

If registration does not work

If the IP phone is not successfully registered and configured, perform the following steps. On the phone:

1. Press the /••• button (TS-350i) / button (TS-550i).
2. Press **6** to enter the **default all settings** menu.
3. Press the **Yes** softkey to default the settings.
4. Press the /••• button (TS-350i) / button (TS-550i) to exit the menu.
5. The phone will request you reboot the phone. Press the **Yes** softkey to initiate the reboot. It should take no more than 1 minute for boot process to finish.
6. If setting up an external IP extension, follow the steps in *Programming the TalkSwitch IP phone as an external IP extension* after the phone reboots.
7. Contact your reseller or TalkSwitch Customer Support if registration is still unsuccessful.

ADDING TALKSWITCH TS-9112i, TS-9133i AND TS-480i IP PHONES

To add a TalkSwitch TS-9112i, TS-9133i or TS-480iIP phone within your office, connect the phone to the LAN and follow the prompts on the phone to set the extension number. The phone will work right away. Later you can complete the configuration in the TalkSwitch management software.

Alternatively, you can connect the phone to the network, skip setting the extension number and then do the configuration using the TalkSwitch management software.

Connecting the TS-9112i, TS-9133i and TS-480i IP phones to the network

1. If you will select the extension using the phone itself, ensure the TalkSwitch management software is closed.

2. Connect a network cable between the LAN port on the phone (marked ⧈) and your network (i.e. router or LAN connection). The TalkSwitch 9133i and 480i IP phones also have a PC port. The PC port can be used to connect the PC to the network if only one network connection is available.

3. Connect power to the phone, either using the power adapter, or an 802.3af Power-Over-Ethernet (POE) source (TS-9133i or TS-480i).

   If the phone is connected to the same network as the TalkSwitch system, and an extension has been configured with the phone's MAC address, the system will automatically register and configure the phone. When complete, the phone will display the extension name and extension number.

   If the phone is connected to a different network than the TalkSwitch system, the phone will display the default time and date of Sat, Jan 1 12:00 am.

   If the phone is connected to the same network as the TalkSwitch system, but no extension has been configured with the phone's MAC address, the following prompt appears on the phone display.

TS-9112i	TS-9133i	TS-480i

`Ext Setup?`
 	
`^=Cancel v=Enter`
	`Ext Setup?`
	
	`^=Cancel v=Enter`
		`Extension Setup?`

4. If you will select the phone's MAC address later, and do not want to select the extension using the phone itself, press the up arrow key on the TS-9112i or TS-9133i, or press the **No** softkey on the TS-480i.

5. To select the extension using the phone itself:

   a) Press the down arrow key on the TS-9112i or TS-9133i, or press the **Yes** softkey on the TS-480i. The phone displays the following prompt.

TS-9112i	TS-9133i	TS-480i

`Ext Number?`
`_`
`^=Cancel v=Enter`
	`Ext Number?`
	`_`
	`^=Cancel v=Enter`
		`Extension Number?`

   b) Use the phone to enter a valid available extension number.

c) Press the down arrow key on the TS-9112i or TS-9133i, or press the **Enter** softkey on the TS-480i. The phone displays the following prompt.

TS-9112i	TS-9133i	TS-480i

`Done! Reboot Now`
 	
`^=Cancel v=Enter`
	`Done! Reboot Now`
	
	`^=Cancel v=Enter`
		`Success!`
		`Reboot the phone`

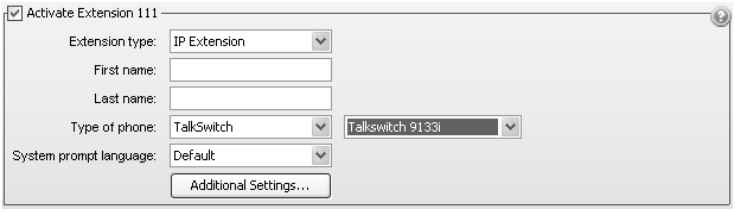
If you have not entered a valid available extension number, the phone returns to step a.

d) Press the down arrow key on the TS-9112i or TS-9133i, or press the **Reboot** softkey on the TS-480i. The phone reboots, and then displays the date, time, extension number, and number of voicemails (if any). The phone is available for use, but you can configure additional features with the TalkSwitch management software.

Adding the extension to the TalkSwitch system

1. Launch the TalkSwitch management software.
2. Select the **Local Extensions/Fax** page.
3. Select an available extension number.
4. Select the *Extension* tab.

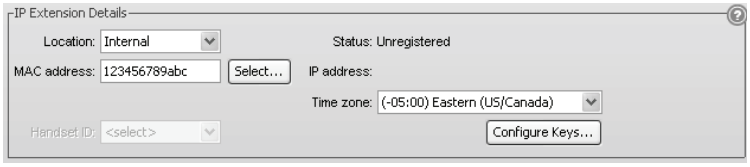
Activate extension area



If you connected a TalkSwitch TS-9112i, TS-9133i or TS-480i IP phone to the LAN and used it to select an extension number, the *Extension type* and *Type of phone* will already be assigned and displayed. In this case you will enter the *First name* and *Last name*, and will select the *System prompt language*.

1. Ensure the *Activate extension* check box is selected.
2. If necessary, set the *Extension type* to *IP extension*.
3. Enter the user's *First name* and *Last name*. The names are used for caller ID, and appear within other pages of the TalkSwitch management software. The *Last name* is used with the dial-by-name directory.
4. If necessary, select *TalkSwitch* as the *Type of phone*, and then select the model.
5. Select the language for prompts heard by the user of the extension in the *System prompt language* list.

IP extension details area



If you connected a TalkSwitch TS-9112i, TS-9133i or TS-480i IP phone to the LAN and used it to select an extension number, the *IP Extension Details* area for that extension will be complete.

If necessary, perform the following steps:

1. Set the *Location*. Choices are:

   - *Internal* — The phone is an internal IP extension located within the office, and is connected to the same LAN as the TalkSwitch unit.

   - *External* — The phone is an external IP extension located outside the office, and is connected to the TalkSwitch unit over the internet. See *External IP extensions* on page 2.

Warning: Calls to an emergency service number using an external IP extension will not send the correct address to the emergency operator. We strongly recommend that you apply a warning label to any external IP extension stating:

If an emergency call is made from this phone, you must provide your address to the emergency operator.

2. If you set *Location* to *External*, select the *Time Zone* that matches the location of the IP phone.

3. Ensure the *Phone MAC Address* is complete:

   - The *Phone MAC Address* will be complete, if you connected the phone to the LAN and used it to select the extension number.

   - You can select the *Phone MAC Address* from a list of automatically-detected phones connected to your LAN. To use this method:

     i) Click the **Select...** button. A **MAC Selection** window appears and lists TalkSwitch IP phones of the selected type.

ii) Select the MAC address of the IP phone for the current extension, and then click **Select**.

- You can enter the *Phone MAC Address* manually. This is the required method if you are setting up an external IP extension. The MAC Address is a 12-digit alphanumeric string located in the barcode on the bottom of the phone and the box the phone came in.

4. Choose **File > Save**. The system will create a configuration file that the phone will download when the phone is restarted.

About programmable function keys

The TS-9133i has 7 programmable functions keys, and the TS-480i has 14 programmable softkeys. The keys allow the user to access TalkSwitch features, and to monitor and engage lines, extensions and queued calls (i.e. line appearance).

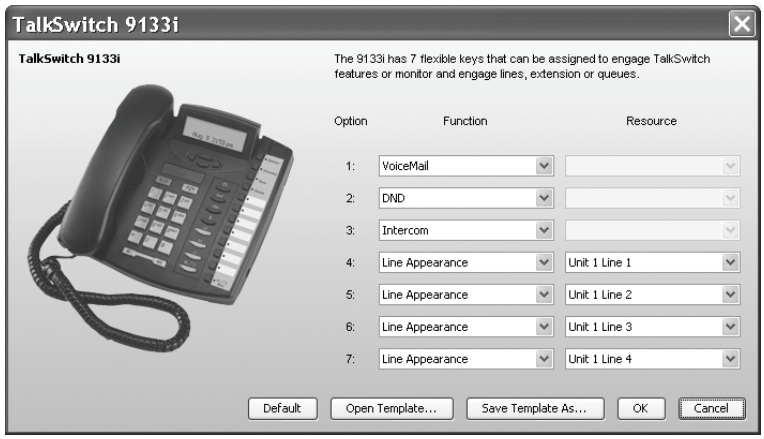
Note that the keys cannot be programmed if the extension has hot line access enabled. In this case, pressing the top function key of the TS-9133i or the **HotLine** softkey of the TS-480i connects to the resource.

Programming TS-9133i function keys

1. Click **Configure Keys**. This button is enabled if the *IP Extension Details* area is complete. The **TalkSwitch 9133i** window appears.

2. For each key, select the *Function* and the *Resource* (if applicable). The function keys can be assigned for Line Appearance, Extension Appearance, Voicemail, Do Not Disturb (DND), Park, Unpark, Call Pickup (any or specific extension), Intercom Page, or Overhead Page. For further details, click the Help icon in the *IP Extension Details* area.

3. Optionally, you can apply predefined key assignments from a template file using the **Open Template** button. See *Using a key assignment template* on page 8.



If necessary, use the **Default** button to restore the keys to their default settings.

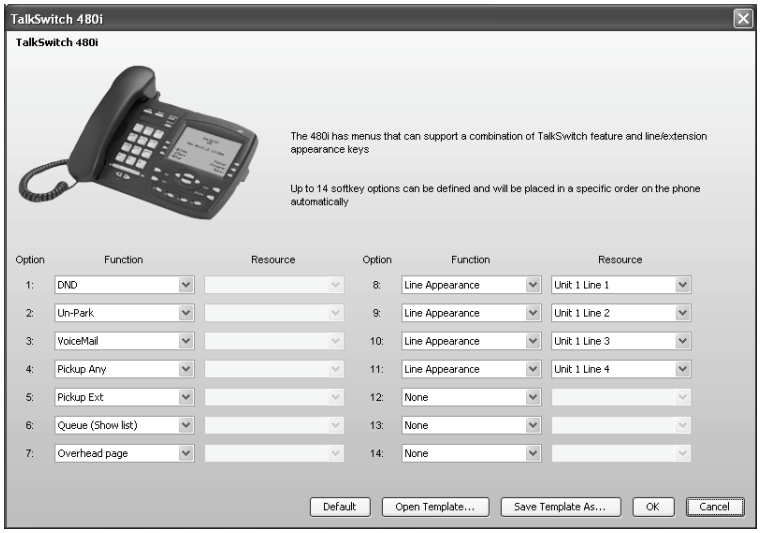
4. Your key assignments can be saved as a template for programming additional phones. See *Saving a key assignment template* on page 8.

Programming TS-480i softkeys

1. Click **Configure Keys**. This button is enabled if the *IP Extension Details* area is complete. The **TalkSwitch 480i** window appears.

2. Select up to 14 softkey options. For each option, select the *Function* and the *Resource* (if applicable). The function keys can be assigned for Line Appearance, Extension Appearance, Queue Appearance, Voicemail, Do Not Disturb (DND), Park, Unpark, Call Pickup (any or specific extension), show Queue, or Overhead Page. For further details click the Help icon in the *IP Extension Details* area.

3. Optionally, you can apply predefined key assignments from a template file using the **Open Template** button. See *Using a key assignment template* on page 8.



   If necessary, use the **Default** button to restore they keys to their default settings.

4. Your key assignments can be saved as a template for programming additional phones. See *Saving a key assignment template* on page 8.

Programming the TalkSwitch IP phone as an external IP extension

If you are setting up an external IP extension, you must ensure there is a communication path over the network between your phone and your TalkSwitch system. See *Configuring the router* on page 2.

Program the following settings into the phone. On the phone:

1. Press the **Options** key.

2. Use the cursor keys to navigate to the **Network Settings** menu, and then press **Enter** or **Show**.

3. Enter the password. By default this is 22222. When the TalkSwitch unit configures the phone, it changes the password to 23646 (which spells “admin” on the telephone keypad).

4. Use the cursor keys to navigate to the **TFTP Settings** menu, and then press **Enter** or **Show**.

5. Select **Primary TFTP**, and then press **Enter** or **Show**.

6. Use the keypad to enter the public IP address or FQDN of the TalkSwitch system, and then press **Set** or **Done**.

7. Reboot the phone. After a short delay, the phone will indicate it is initializing the network, checking for firmware updates, and following automatic programming steps. During this process the phone contacts the TalkSwitch unit, which automatically registers and configures the phone. When complete, the phone will display the extension name and extension number. The phone is now ready for use.

If registration does not work

If the IP phone is not successfully registered and configured, perform the following steps. On the phone:

1. Press the **Options** key.

2. Use the cursor keys to navigate to the **Phone Status** menu, and then press **Enter** or **Show**.

3. Use the cursor keys to navigate to the **Restore Defaults** menu, and then press **Enter** or **Show**.

4. Enter the password. By default this is 22222. When the TalkSwitch unit configures the phone, it changes the password to 23646 (which spells "admin" on the telephone keypad).

5. Use the cursor keys to navigate to the **Factory Defaults** menu, and then press **Enter** or **Show**.

6. Select **All Defaults**, and then press **Enter** or **Show**.

7. If setting up an external IP extension, follow the steps in *Programming the TalkSwitch IP phone as an external IP extension* after the phone reboots.

8. Contact your reseller or TalkSwitch Customer Support if registration is still unsuccessful.

Further configuration

The steps above will configure your TalkSwitch IP phone and will enable the programmable keys.

Click the *Local Extension/Fax* Help icons for instructions on configuring direct line access, hunt group permissions, Caller ID settings (VoIP only), call handling, and voicemail.

For phone-specific configuration, refer to your phone user guide.

Contact your reseller or TalkSwitch Customer Support if you require further assistance with special ports or network settings.

ADDING TALKSWITCH TS-850i IP PHONES

Installing the base

1. Install the TS-850i base according to the instructions in the *TS-850i Start Guide*.
2. Connect the Ethernet cable from the WAN port on the base to a LAN port on your router or Ethernet switch. The TalkSwitch unit must be connected to the same LAN.
3. Install the TS-850i handset(s) and allow them to register with the TS-850i, according to the instructions in the *TS-850i Start Guide*.

Configuring the TS-850i as an IP extension

After installing the TS-850i, configure your phone as an IP extension. The phone can be located within the office, or outside the office (i.e. as an external IP extension).

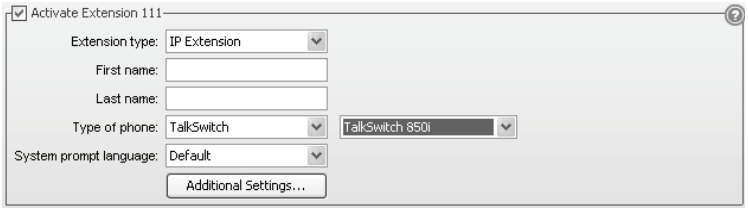
Before configuring a phone, ensure that no handsets registered with the associated base are being used. If a handset is on a call, the call will be terminated when the system resets the base during configuration of the phone.

Configuring the TS-850i for use within the office

If the TS-850i is located within the office, it connects to your TalkSwitch system over the local area network (LAN).

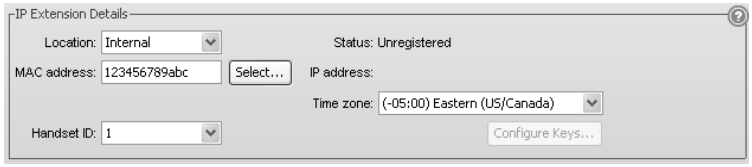
1. Launch the TalkSwitch management software.
2. Select the **Local Extensions/Fax** page.
3. Select an available extension number.
4. Select the *Extension* tab.

Activate extension area



1. Ensure the *Activate extension* check box is selected.
2. Set the *Extension type* to *IP extension*.
3. Enter the user's *First name* and *Last name*. The names are used for caller ID, and appear within other pages of the TalkSwitch management software. The *Last name* is used with the dial-by-name directory.
4. Select *TalkSwitch* as the *Type of phone*, and then select *TalkSwitch 850i* as the model.
5. Select the language for prompts heard by the user of the extension in the *System prompt language* list.

IP extension details area



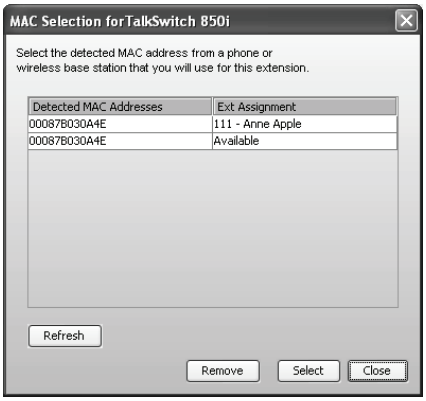
1. Set the *Location*. Choices are:
   - *Internal* — The phone is an internal IP extension located within the office, and is connected to the same LAN as the TalkSwitch unit.
   - *External* — The phone is an external IP extension located outside the office, and is connected to the TalkSwitch unit over the internet. See *External IP extensions* on page 2

Warning: Calls to an emergency service number using an external IP extension will not send the correct address to the emergency operator. We strongly recommend that you apply a warning label to any external IP extension stating:

If an emergency call is made from this phone, you must provide your address to the emergency operator.

2. If you set *Location* to *External*, select the *Time Zone* that matches the location of the IP phone.

3. Select the *MAC Address* of the phone:
   - You can select the *Phone MAC Address* from a list of automatically-detected phones connected to your LAN. To use this method:
     i) Click the **Select...** button. A **MAC Selection** window appears and lists TalkSwitch IP phones of the selected type.



     ii) Select the MAC address of the IP phone associated to the extension, and then click **Select**.
   - You can enter the *Phone MAC Address* manually. This is the required method if you are setting up an external IP extension. The MAC Address is a 12-digit alphanumeric string located in the barcode on the bottom of the phone and the box the phone came in.

   Note that multiple IP extensions can share the same base.

4. Select the *Handset ID* for the extension. Use the handset name as shown on the handset screen.

5. After configuring the extensions, choose **File > Save**. The TalkSwitch system will automatically configure each handset.

Programming the TalkSwitch TS-850i IP phone as an external IP extension

If you are setting up an external IP extension, you must ensure there is a communication path over the network between your phone and your TalkSwitch systsem. See *Configuring the router* on page 2.

Before configuring a phone, ensure that no handsets registered with the associated base are being used. If a handset is on a call, the call will be terminated when the system resets the base during configuration of the phone.

1. In Idle mode, press the **OK** key on the handset to access the Main menu.

2. Choose **Settings**, and then press the **OK** key.

3. Choose **Network settings**, and then press the **OK** key.

4. Select **Provision server**, and then press the **OK** key.

5. Enter the Public IP address or FQDN (fully qualified domain name) of the TalkSwitch system as provided by your administrator. To enter a period:

   a) Press the **Options** softkey.

   b) Choose **Insert symbol**, and then press the **OK** key.

   c) Use the navigation keys to choose the period, and then press the **OK** key.

6. Press the **Save** softkey to accept the changes, and then press the **Back** key.

7. When prompted to reboot the base, select **Yes**. The TS-850i will automatically download the configuration from the TalkSwitch system.

Using the TS-850i with a traditional phone line

NOTE: If you connected the telephone cable from the Line port on the base to the telephone wall socket, you can use the TS-850i with a traditional phone line.

When connected to the traditional telephone network (PSTN) or to a TalkSwitch system as an analog extension, FLASH is engaged by pressing the **R#** key. The key MUST be held for approximately 2 seconds until you connect to the other caller (call waiting) or receive dial tone to initiate a calling feature.

Further configuration

The steps above will configure your TalkSwitch IP phone and will enable the programmable keys. Click the *Local Extension/Fax* Help icons for instructions on configuring direct line access, hunt group permissions, Caller ID settings (VoIP only), call handling, and voicemail.

For phone-specific configuration, refer to your phone user guide.

Contact your reseller or TalkSwitch Customer Support if you require further assistance with special ports or network settings.

Checking and updating firmware

Occasionally, you may want to check and/or update the TS-850i firmware.

To check the firmware version:

1. In Idle mode, press the **Increase Volume** button on the left side of the handset. After a brief delay the phone will display a System Status screen.

2. Press the down arrow button to show the second screen, which includes the firmware version (next to the title "SW:").

NOTE: If your installation uses repeaters to extend the range of the handsets, turn the repeaters off and bring the handsets within range of the bases before updating the firmware.

For instructions on obtaining firmware for your region and language, contact your Authorized TalkSwitch reseller. If you purchased directly from TalkSwitch, visit **http://global.talkswitch.com** to obtain further information or assistance.

For more information, refer to the Troubleshooting section in your phone user guide.

TALKSWITCH PHONE PROGRAMMABLE KEY FUNCTIONS

Many TalkSwitch IP phone models offer programmable keys. The function and associated resources are assigned using TalkSwitch Management Software in the **Local Extensions/Fax > IP Extension Details > Configure Keys** page. Supported functions for a phone model typically include most of the items listed below.

- *Line appearance* — Select a telephone line or VoIP number as the resource. The corresponding button or softkey will display the status of the line, and allow you to make calls with a single press of the button or softkey.

  For phones equipped with button lights, the button will light up when the line is in use, flash if the line is ringing, or be off when the line is available.

  For phones with softkeys, a status icon and line ID will be displayed beside the softkey. The display will show an off-hook icon when the line is in use, show a ringing icon when the line is ringing, and show an on-hook icon when the line is available.

- *Extension appearance* — Select a local extension as the resource.

  The corresponding button or softkey will display the status of the selected extension, and allow you to call the extension with a single press of the button or softkey.

  For phones equipped with button lights, the button will light up when the selected extension is in use, flash if the extension is ringing, or be off when the extension is available.

  For phones with softkeys, a status icon and extension call ID will be displayed beside the softkey. The display will show an off-hook icon when the selected extension is in use, show a ringing icon when the extension is ringing, and show an on-hook icon when the extension is available. The extension call ID is also be displayed.

- *Queue appearance* — Select a local extension as the resource. The corresponding button or softkey will indicate whether calls are queued at the selected extension, and allow you to pick up the oldest queued call with a single press of the button or softkey.

  For phones equipped with button lights, the button will flash if calls are queued for the extension, or be off when there are no queued calls.

  For phones with softkeys, a status icon, extension number and "Q" will be displayed beside the softkey. The display will show a ringing icon if calls are queued for the extension, or an on-hook icon when there are no queued calls.

- *Voicemail* — Do not select a resource. Press the button or softkey to access the voice mailbox of the local extension. Lights or icons are not used for voicemail keys. Note: You can also access Voicemail by pressing ****#**.
- *DND* — Do not select a resource. Press the button or softkey to toggle Do Not Disturb mode on or off. Lights or icons are not used for DND keys. Note: You can also toggle DND mode by pressing ***62#**.
- *Park* — Do not select a resource. Press the button or softkey to put the call on hold, in the next available park orbit. The system will respond with the park orbit number (500 to 509). Lights or icons are not used for Park keys. Note: You can also Park a call by pressing /***510#** on a TS-350i, or ***510#** on a TS-550i, or Xfer ***510#** on a TS-9112i, TS-9133i or TS-480i.
- *Un-park* — Do not select a resource. Press the button or softkey, select the park orbit number (500 to 509), then press Unpark to retrieve the call. Softkey displays will show the parked call ID beside the orbit number. Lights or icons are not used for Unpark keys. Note: You can also Unpark a call by lifting the handset, pressing ******, dialing the park orbit number, then pressing **#**.

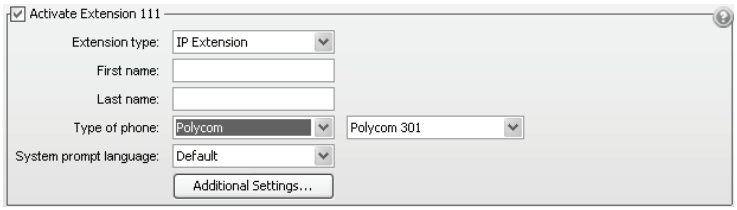
- *Pickup any* — Do not select a resource. Press the button or softkey to answer a call from an outside number ringing any extension. Lights or icons are not used for Pickup keys. Note: You can also pick up a call by pressing ***9#**.
- *Pickup ext* — Do not select a resource. Press the button or softkey, dial an extension, then dial **#** (or softkey again) to answer a call from an outside number or extension ringing the selected extension. Lights or icons are not used for Pickup keys. Note: You can also pick up a call at a selected extension by pressing ***7**, dialing the extension, then pressing **#**.
- *Intercom page* — Do not select a resource. Press the button or softkey, dial an extension, then press **#** to page the extension in Intercom mode. The intercom page function can only page TalkSwitch phones. Lights or icons are not used for Page keys. Note: You can also page a TalkSwitch phone by pressing ***84**, dialing the extension, then pressing **#**, or the **Dial** key or softkey.
- *Overhead page* — Do not select a resource. Press the button or softkey to connect to an attached external PA system. Lights or icons are not used for Page keys. Note: You can also page the external PA system by pressing ***0#**.
- *Queue (show list)* — Do not select a resource. Press the **Queue** softkey, select a queued call, then press **Retrieve** to connect to the selected call. This function is only available when programmed as a function key on supported phone models (e.g. TS-480i).
- *Phone book access* — Select the phone book record two-digit speed dial number as the resource. Press the button or softkey to place a call using the contact information from the associated phone book record. When the button is pressed, it will light up for the duration of the call. This function is available on the TS-350i and TS-550i models.
- *User Defined (phone)* — The button or softkey function is assigned using the phone's configuration options, and is not assigned using TalkSwitch Management software.
- *None* — The button or softkey is not programmed.

ADDING POLYCOM IP PHONES

Adding a Polycom phone to the TalkSwitch system configuration

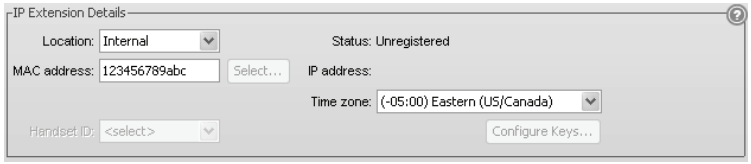
1. Launch the TalkSwitch management software.
2. Select the **Local Extension/Fax** page.
3. Select the *Extension* tab.
4. Select an available extension number.

Activate extension area



1. Select the *Activate Extension* check box.
2. Set the *Extension type* to *IP extension*.
3. Enter the user's *First name* and *Last name*. The names are used for caller ID, and appear within other pages of the TalkSwitch management software. The *Last name* is used with the dial-by-name directory.
4. Select *Polycom* as the *Type of phone*, and then select the model. Choices are *Polycom 301*, *Polycom 320*, *Polycom 430*, *Polycom 501*, *Polycom 550*, *Polycom 601* and *Polycom 650*.
5. Select the language for prompts heard by the user of the extension in the *System prompt language* list.

IP extension details area



1. Set the *Location*. Choices are:
   - *Internal* — The phone is an internal IP extension located within the office, and is connected to the same LAN as the TalkSwitch unit.
   - *External* — The phone is an external IP extension located outside the office, and is connected to the TalkSwitch unit over the internet. A VoIP-enabled TalkSwitch unit is required.

Warning: Calls to an emergency service number using an external IP extension will not send the correct address to the emergency operator. We strongly recommend that you apply a warning label to any external IP extension stating:

If an emergency call is made from this phone, you must provide your address to the emergency operator.

2. If you are setting up an external IP extension, select the *Time Zone* of the IP phone.

3. Enter the *Phone MAC Address*. This is a 12-digit alphanumeric string located in the barcode. The MAC address allows the TalkSwitch unit to connect to the IP phone and automatically configure it.

4. Choose **File > Save**. The system will create a configuration file that the phone will download when the phone is restarted.

Configuring the system for external IP extensions

If you are setting up an external IP extension:

1. Ensure your TalkSwitch system is connected to a network.

2. Ensure that you have set up a public IP address for the TalkSwitch system.

3. Ensure the router is configured at the TalkSwitch location. There should be no need to make any adjustments to the firewall at the remote location.

4. All VoIP lines are shared by default. You can also reserve VoIP lines for external IP extensions.

5. External IP extensions will use the preferred codec selected for the TalkSwitch profile. The default preferred codec is G.729. You can select a different preferred codec for the TalkSwitch profile.

Configuring the router

If you are setting up an external IP extension, you must ensure the router is configured.

The *Router Port Forwarding* area of the **IP Configuration** page displays the type of gateway device (i.e. the type of router), the IP address of the gateway (i.e. router), and whether router configuration is required.

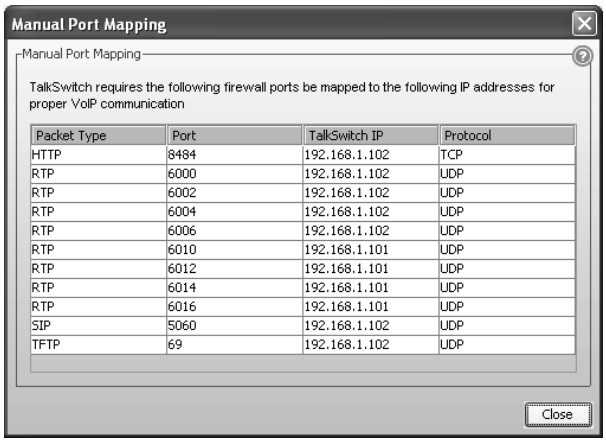
A router is a gateway between the local area network and the Internet. Most routers have a firewall to block unwanted data from the Internet. For voice data to reach the TalkSwitch system through the firewall, port forwarding is required. Port forwarding allows the router to map ports to the IP addresses of the TalkSwitch units. Valid Internet data will use the ports to go through the firewall to the TalkSwitch units.

If you are setting up external IP extensions, a TalkSwitch VoIP network, or a VoIP service that doesn't handle port forwarding, port forwarding is required.

If port forwarding is required, and your router supports uPNP (Universal Plug and Play), ensure uPNP is enabled. The TalkSwitch system will use uPNP to automatically set up port forwarding, and the **Automatic (uPNP Enabled)** link will appear. No router configuration is required.

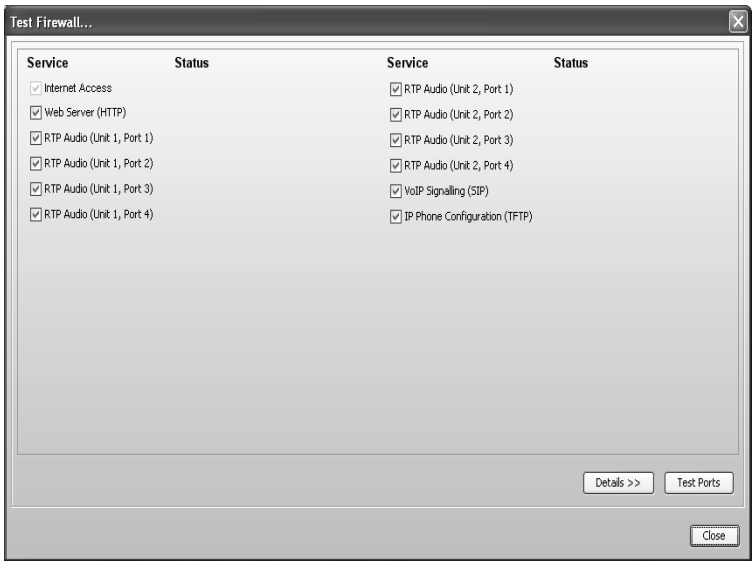
If port forwarding is required but your router doesn't support uPNP, or automatic port forwarding doesn't work, the **Manual Port Mapping Required** link will appear. You will need to configure the router as described below.

1. Select the **IP Configuration** page.
2. If required, click the **Manual Port Mapping Required** link. The **Manual Port Mapping** window appears. It lists the packet type, port number, IP address and protocol of each required port.


Manual Port Mapping
Manual Port Mapping
TalkSwitch requires the following firewall ports be mapped to the following IP addresses for proper VoIP communication
Close

Packet Type	Port	TalkSwitch IP	Protocol
HTTP	8484	192.168.1.102	TCP
RTP	6000	192.168.1.102	UDP
RTP	6002	192.168.1.102	UDP
RTP	6004	192.168.1.102	UDP
RTP	6006	192.168.1.102	UDP
RTP	6010	192.168.1.101	UDP
RTP	6012	192.168.1.101	UDP
RTP	6014	192.168.1.101	UDP
RTP	6016	192.168.1.101	UDP
SIP	5060	192.168.1.102	UDP
TFTP	69	192.168.1.102	UDP

3. To access the router configuration:
   a) Click the link containing the IP address of the gateway. The default browser starts, and prompts you for the router's user name and password.
   b) Enter the router's user name and password. The browser shows a setup screen.
   c) Navigate to the screen used to set up port forwarding. See your router documentation.
   d) Set up port forwarding using the information from the **Manual Port Mapping** window. See your router documentation for instructions on how to map ports. For information on configuring routers and mapping ports, visit **www.portforward.com/english/routers/port_forwarding/routerindex.htm**.
4. To check the status of each port through the firewall, click **Check Firewall**. The **Test Firewall** window appears.



5. Select the services you want to check.
6. Click **Test Ports**. The system will check the ports for the selected services.

Configuring the router manually

If you cannot access the router configuration through the **IP Configuration** page, configure the router manually.

1. Open the router configuration and navigate to the screen used to set up port forwarding. See your router documentation.
2. Map port 5060 (Type: UDP) to the TalkSwitch unit acting as local proxy. Port 5060 is the default port for forwarding SIP signaling data to the TalkSwitch system.

   If required, you can map a different port. In this case, enter the port in the *SIP signalling port* box of the **VoIP Settings** window.
3. Map the following ports (Type: UDP) to the TalkSwitch units. These RTP ports forward voice traffic to the TalkSwitch system by default.

VoIP Lines/Unit	Unit 1	Unit 2	Unit 3	Unit 4
4	6000–6006	6010–6016	6020–6026	6030–6036
8	6100–6114	6200–6214	6300–6314	6400–6414

   If required, you can map different ports. In this case enter the first port in the *Starting RTP port* box of the **VoIP Settings** window.
4. Map port 69 (Type: UDP) to the TalkSwitch unit acting as local proxy. Port 69 allows the TalkSwitch system to configure external IP extensions.
5. Map port 9393 (Type: TCP) to the TalkSwitch unit acting as local proxy. Port 9393 allows remote configuration of the TalkSwitch system.
6. If available, enable Quality of Service (QoS) to give voice traffic priority over data.
7. Save the configuration to the router.

Connecting the Polycom phone to the network

1. Connect a network cable between your router and the port marked LAN on the back of the phone. The PC port on the phone can be used to connect the PC if only one LAN port is available.
2. Connect the power adapter to the phone.

Confirming the Polycom firmware version

The TalkSwitch system requires the IP phone to have a specific firmware version.

1. Check the required firmware version from **http://global.talkswitch.com**.
2. Confirm the firmware version currently installed the IP phone. On the phone:

   a) Press the **Menu** key and select **Status > Platform > Application > Main**.

   b) Compare *Version* to the required firmware version. If the firmware version is the same, proceed to *Programming the Polycom IP phone*. If not, follow the instructions in *Updating the Polycom firmware* on page 26.

Programming the Polycom IP phone

The TalkSwitch system automatically configures the necessary parameters required for the proper operation of the Polycom phone with TalkSwitch. On the phone:

1. Press the **Menu** key and select **Settings > Advanced**.
2. Enter the password, and then press the **Enter** key. By default this is 456. When the TalkSwitch unit configures the phone, it changes the password to 23646 (which spells "admin" on the telephone keypad).
3. Select **Admin Settings > Network Configuration**.
4. Select **Server Menu** and change *ServerType* to *TrivialFTP*.
5. Select **Server Address** and press the **Edit** key. Press the **1/A/a** key. If you are setting up an internal IP extension, enter the IP address of the TalkSwitch unit acting as local proxy. If you are setting up an external IP extension, enter the public IP address or FQDN of the TalkSwitch system. Use the ***** key to enter decimal points.
6. Press the **Exit** button three times. **Advanced** appears at the top of the menu.
7. Select **Restart Phone** and confirm by selecting **Yes**.

The phone connects to the TalkSwitch local proxy and downloads the configuration file. If the configuration is successful, the phone will reboot and show the time, date and extension number. To ensure full functionality, dial another extension and check the audio transmission in both directions.

Further configuration

The steps above will configure your Polycom IP phone as a local extension. For more information, refer to the Troubleshooting section in your phone user guide.

See *Local Extension/Fax* in Chapter 2 of the *TalkSwitch User Guide* for instructions on configuring direct line access, hunt group permissions, Caller ID settings (VoIP only), call handling, and voicemail.

Updating the Polycom firmware

This procedure is only required if you need to update the Polycom firmware. To update the firmware:

- Install a TFTP application.
- Download and extract firmware files.
- Configure the phone to point to the firmware files.

Installing a TFTP application

You require a TFTP server application to update the phone firmware. One such free TFTP utility can be downloaded from Solarwinds at the following URL:

http://support.solarwinds.net/updates/New-customerFree.cfm?ProdId=52

1. Download and install the TFTP program.
2. Take note of the location of the TFTP program root directory location. The phone firmware files are extracted to this directory in the next section. (i.e. for Solarwinds TFTP, the root directory is **C:\TFTP-Root**).

Downloading and extracting firmware files

Firmware files for supported IP phones can be found at **http://global.talkswitch.com**.

1. Download the firmware file required for your phone from the URL above. The files are contained in ZIP archives.
2. Extract the firmware files into the TFTP program root directory location.

Configuring the phone to point to the firmware files

Changing the phone **Server Address** setting to the IP address of the PC with the TFTP program and the firmware files enables the update process. On the phone:

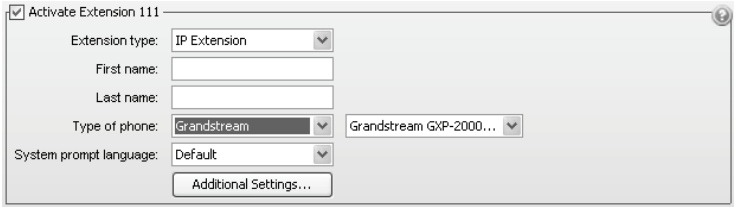
1. Press the **Menu** key and select **Settings > Advanced**.
2. Enter the password, and then press the **Enter** key. By default this is 456. When the TalkSwitch unit configures the phone, it changes the password to 23646 (which spells "admin" on the telephone keypad).
3. Select **Admin Settings > Network Settings**.
4. Select **Server Menu** and change *ServerType* to *TrivialFTP*.
5. Select **Server Address** and press the **Edit** key. Press the **1/A/a** key and enter the IP address of the PC running the TFTP server, using the * key to enter decimal points.
6. Press the **Exit** button three times. **Advanced** appears at the top of the menu.
7. Press **3** for **Restart Phone** and confirm by pressing the **Yes** button.
8. Once the firmware is updated, reconfigure the phone according to *Programming the Polycom IP phone* on page 26. Note that some errors will occur for files not found. These are expected and can be ignored.

ADDING GRANDSTREAM IP PHONES

Adding a Grandstream phone to the TalkSwitch system configuration

1. Launch the TalkSwitch management software.
2. Select the **Local Extension/Fax** page.
3. Select the *Extension* tab.
4. Select an available extension number.

Activate extension area



1. Select the *Activate Extension* check box.
2. Set the *Extension type* to *IP extension*.
3. Enter the user's *First name* and *Last name*. The names are used for caller ID, and appear within other pages of the TalkSwitch management software. The *Last name* is used with the dial-by-name directory.
4. Select *Grandstream* as the *Type of phone*, and then select *Grandstream GXP-2000/2020*.
5. Select the language for prompts heard by the user of the extension in the *System prompt language* list.

IP extension details area

1. Set the *Location*. Choices are:
   - *Internal* — The phone is an internal IP extension located within the office, and is connected to the same LAN as the TalkSwitch unit.
   - *External* — The phone is an external IP extension located outside the office, and is connected to the TalkSwitch unit over the internet. A VoIP-enabled TalkSwitch unit is required.

Warning: Calls to an emergency service number using an external IP extension will not send the correct address to the emergency operator. We strongly recommend that you apply a warning label to any external IP extension stating:

If an emergency call is made from this phone, you must provide your address to the emergency operator.

2. If you are setting up an external IP extension, select the *Time Zone* of the IP phone.

3. Enter the *Phone MAC Address*. This is a 12-digit alphanumeric string located below the second barcode. The barcode label is on the bottom of the phone. The MAC address allows the TalkSwitch unit to connect to the IP phone and then automatically configure it.

4. Choose **File > Save**. The system will create a configuration file that the phone will download when the phone is restarted.

Configuring the system for external IP extensions

If you are setting up an external IP extension:

1. Ensure your TalkSwitch system is connected to a network.

2. Ensure that you have set up a public IP address for the TalkSwitch system.

3. Ensure the router is configured at the TalkSwitch location. There should be no need to make any adjustments to the firewall at the remote location.

4. All VoIP lines are shared by default. You can also reserve VoIP lines for external IP extensions.

5. External IP extensions will use the preferred codec selected for the TalkSwitch profile. The default preferred codec is G.729. You can select a different preferred codec for the TalkSwitch profile.

Configuring the router

If you are setting up an external IP extension, you must ensure the router is configured.

The *Router Port Forwarding* area of the **IP Configuration** page displays the type of gateway device (i.e. the type of router), the IP address of the gateway (i.e. router), and whether router configuration is required.

A router is a gateway between the local area network and the Internet. Most routers have a firewall to block unwanted data from the Internet. For voice data to reach the TalkSwitch system through the firewall, port forwarding is required. Port forwarding allows the router to map ports to the IP addresses of the TalkSwitch units. Valid Internet data will use the ports to go through the firewall to the TalkSwitch units.

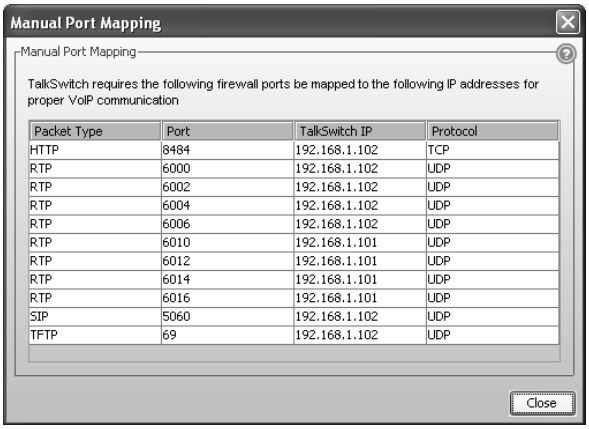
If you are setting up external IP extensions, a TalkSwitch VoIP network, or a VoIP service that doesn't handle port forwarding, port forwarding is required.

If port forwarding is required, and your router supports uPNP (Universal Plug and Play), ensure uPNP is enabled. The TalkSwitch system will use uPNP to automatically set up port forwarding, and the **Automatic (uPNP Enabled)** link will appear. No router configuration is required.

If port forwarding is required but your router doesn't support uPNP, or automatic port forwarding doesn't work, the **Manual Port Mapping Required** link will appear. You will need to configure the router as described below.

1. Select the **IP Configuration** page.

2. If required, click the **Manual Port Mapping Required** link. The **Manual Port Mapping** window appears. It lists the packet type, port number, IP address and protocol of each required port.


Manual Port Mapping
Manual Port Mapping
TalkSwitch requires the following firewall ports be mapped to the following IP addresses for proper VoIP communication
Packet Type | Port | TalkSwitch IP | Protocol
HTTP | 8484 | 192.168.1.102 | TCP
RTP | 6000 | 192.168.1.102 | UDP
RTP | 6002 | 192.168.1.102 | UDP
RTP | 6004 | 192.168.1.102 | UDP
RTP | 6006 | 192.168.1.102 | UDP
RTP | 6010 | 192.168.1.101 | UDP
RTP | 6012 | 192.168.1.101 | UDP
RTP | 6014 | 192.168.1.101 | UDP
RTP | 6016 | 192.168.1.101 | UDP
SIP | 5060 | 192.168.1.102 | UDP
TFTP | 69 | 192.168.1.102 | UDP
Close

3. To access the router configuration:

   a) Click the link containing the IP address of the gateway. The default browser starts, and prompts you for the router's user name and password.

   b) Enter the router's user name and password. The browser shows a setup screen.

   c) Navigate to the screen used to set up port forwarding. See your router documentation.

   d) Set up port forwarding using the information from the **Manual Port Mapping** window. See your router documentation for instructions on how to map ports. For information on configuring routers and mapping ports, visit **www.portforward.com/english/routers/port_forwarding/routerindex.htm**.

4. To check the status of each port through the firewall, click **Check Firewall**. The **Test Firewall** window appears.

5. Select the services you want to check.

6. Click **Test Ports**. The system will check the ports for the selected services.

Configuring the router manually

If you cannot access the router configuration through the **IP Configuration** page, configure the router manually.

1. Open the router configuration and navigate to the screen used to set up port forwarding. See your router documentation.
2. Map port 5060 (Type: UDP) to the TalkSwitch unit acting as local proxy. Port 5060 is the default port for forwarding SIP signaling data to the TalkSwitch system.

   If required, you can map a different port. In this case, enter the port in the *SIP signalling port* box of the **VoIP Settings** window.
3. Map the following ports (Type: UDP) to the TalkSwitch units. These RTP ports forward voice traffic to the TalkSwitch system by default.

VoIP Lines/Unit	Unit 1	Unit 2	Unit 3	Unit 4
4	6000–6006	6010–6016	6020–6026	6030–6036
8	6100–6114	6200–6214	6300–6314	6400–6414

   If required, you can map different ports. In this case enter the first port in the *Starting RTP port* box of the **VoIP Settings** window.
4. Map port 69 (Type: UDP) to the TalkSwitch unit acting as local proxy. Port 69 allows the TalkSwitch system to configure external IP extensions.
5. Map port 9393 (Type: TCP) to the TalkSwitch unit acting as local proxy. Port 9393 allows remote configuration of the TalkSwitch system.
6. If available, enable Quality of Service (QoS) to give voice traffic priority over data.
7. Save the configuration to the router.

Connecting the Grandstream phone to the network

1. Connect a network cable between your router and the port marked LAN on the back of the phone. The PC port on the phone can be used to connect the PC if only one LAN port is available.
2. Connect the power adapter to the phone.
3. Once the phone boots up, it will attempt to obtain an IP address from a router DHCP server.

Confirming the Grandstream firmware version

The TalkSwitch system requires the IP phone to have a certain firmware version.

1. Check the required firmware version at **http://global.talkswitch.com**.
2. Confirm the firmware version currently installed the IP phone. On the phone:

   a) Press the round key (surrounded by four arrow keys) to access the menu.

   b) Select **Status** and press the round key again.

   c) Scroll down until you see **Prog**.

   d) Compare **Prog** to the required firmware version. If the firmware version is the same, proceed to *Programming a Grandstream IP phone*. If not, follow the instructions in *Updating the Grandstream firmware* on page 32.

Programming a Grandstream IP phone

1. Note the IP address that appears on the screen of the Grandstream phone.
2. In a web browser, enter the IP address in the *Address* field.
3. Enter the password. By default this is *admin*. When the TalkSwitch unit configures the phone, it changes the password to 23646 (which spells "admin" on the telephone keypad). The **Grandstream Device Configuration** page appears.

4. On the **Grandstream Device Configuration** page, click **Advanced**.

5. In the section for *Firmware Upgrade and Provisioning*, set *Upgrade Via* to *TFTP*.
6. If you are setting up an internal IP extension, set *Config Server Path* to the IP address of the TalkSwitch unit acting as local proxy. If you are setting up an external IP extension, set *Config Server Path* to the public IP address or FQDN of the TalkSwitch system.
7. Scroll to the bottom of the page and click the **Update** button to save the settings.

8. On the following screen, click the **Reboot** button to apply the settings.

   Note: The reboot process will be completed when you see the extension number and IP address on the display of the phone. When the phone successfully registers, you will see the filled-in Ethernet icon.

9. Test to ensure the phone is configured properly by dialing another local extension.

Further configuration

The steps above will configure your Grandstream IP phone as a local extension. For more information, refer to the Troubleshooting section in your phone user guide.

See *Local Extension/Fax* in Chapter 2 of the *TalkSwitch User Guide* for instructions on configuring direct line access, hunt group permissions, Caller ID settings (VoIP only), call handling, and voicemail.

Updating the Grandstream firmware

This procedure is only required if you need to update the Grandstream firmware. To update the firmware:

- Install a TFTP application.
- Download and extract firmware files.
- Configure the phone to point to the firmware files.

Installing a TFTP application

You require a TFTP server application to update the phone firmware. One such free TFTP utility can be downloaded from Solarwinds at the following URL:

http://support.solarwinds.net/updates/New-customerFree.cfm?ProdId=52

1. Download and install the TFTP program.
2. Take note of the location of the TFTP program root directory location. The phone firmware files are extracted to this directory in the next section. (i.e. for Solarwinds TFTP, the root directory is **C:\TFTP-Root**).

Downloading and extracting firmware files

Firmware files for supported IP phones can be found at **http://global.talkswitch.com**.

1. Download the firmware file required for your phone from the URL above. The files are contained in ZIP archives.
2. Extract the firmware files into the TFTP program root directory location.

Configuring the phone to point to the firmware files

Changing the phone *Firmware Server Path* setting to the IP address of the PC with the TFTP program and the firmware files enables the update process.

1. Note the IP address that appears on the screen of the Grandstream phone.
2. In a web browser, enter the IP address in the *Address* field.
3. Enter the password. By default this is *admin*. When the TalkSwitch unit configures the phone, it changes the password to 23646 (which spells "admin" on the telephone keypad). The **Grandstream Device Configuration** page appears.

4. On the **Grandstream Device Configuration** page, click **Advanced**.

Firmware Upgrade and Provisioning: Upgrade Via TFTP HTTP
Firmware Server Path 192.168.1.101
Config Server Path 192.168.1.101

5. In the section for *Firmware Upgrade and Provisioning*, set *Upgrade Via* to *TFTP*.
6. Set *Firmware Server Path* to the IP address of the PC running the TFTP server.
7. Scroll to the bottom of the page and click the **Update** button to save the settings.

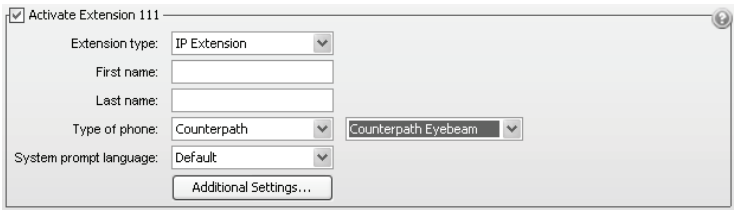
8. On the following screen, click the **Reboot** button to apply the settings.

ADDING COUNTERPATH IP PHONES

Adding a Counterpath phone to the TalkSwitch system configuration

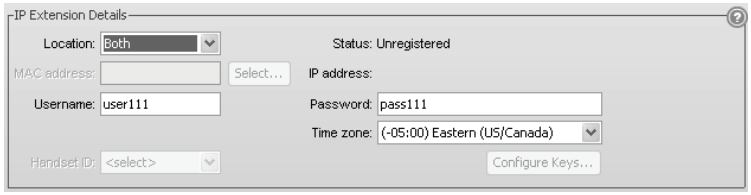
1. Launch the TalkSwitch management software.
2. Select the **Local Extension/Fax** page.
3. Select the *Extension* tab.
4. Select an available extension number.

Activate extension area



1. Select the *Activate Extension* check box.
2. Set the *Extension type* to *IP extension*.
3. Enter the user's *First name* and *Last name*. The names are used for caller ID, and appear within other pages of the TalkSwitch management software. The *Last name* is used with the dial-by-name directory.
4. Select *Counterpath* as the *Type of phone*, and then select *Counterpath Eyebeam*.
5. Select the language for prompts heard by the user of the extension in the *System prompt language* list.

IP extension details area



1. Set the *Location*. Choices are:
   - *Internal* — The phone is an internal IP extension located within the office, and is connected to the same LAN as the TalkSwitch unit.
   - *External* — The phone is an external IP extension located outside the office, and is connected to the TalkSwitch unit over the internet. A VoIP-enabled TalkSwitch unit is required.
   - *Both* — The phone can be used as an internal or external IP extension. A VoIP-enabled TalkSwitch unit is required.

Warning: Calls to an emergency service number using an external IP extension will not send the correct address to the emergency operator. We strongly recommend that you apply a warning label to any external IP extension stating:

If an emergency call is made from this phone, you must provide your address to the emergency operator.

2. If the phone can be used as an external IP extension, select the *Time Zone* of the IP phone.
3. Enter the *Username* and *Password*. The default settings are user[extension number] and pass[extension number].
4. Choose **File > Save**. The system will create a configuration file that the phone will download when the phone is restarted.

Configuring the system for external IP extensions

If you are setting up an external IP extension:

1. Ensure your TalkSwitch system is connected to a network.
2. Ensure that you have set up a public IP address for the TalkSwitch system.
3. Ensure the router is configured at the TalkSwitch location. There should be no need to make any adjustments to the firewall at the remote location.
4. All VoIP lines are shared by default. You can also reserve VoIP lines for external IP extensions.
5. External IP extensions will use the preferred codec selected for the TalkSwitch profile. The default preferred codec is G.729. You can select a different preferred codec for the TalkSwitch profile.

Configuring the router

If you are setting up an external IP extension, you must ensure the router is configured.

The *Router Port Forwarding* area of the **IP Configuration** page displays the type of gateway device (i.e. the type of router), the IP address of the gateway (i.e. router), and whether router configuration is required.

A router is a gateway between the local area network and the Internet. Most routers have a firewall to block unwanted data from the Internet. For voice data to reach the TalkSwitch system through the firewall, port forwarding is required. Port forwarding allows the router to map ports to the IP addresses of the TalkSwitch units. Valid Internet data will use the ports to go through the firewall to the TalkSwitch units.

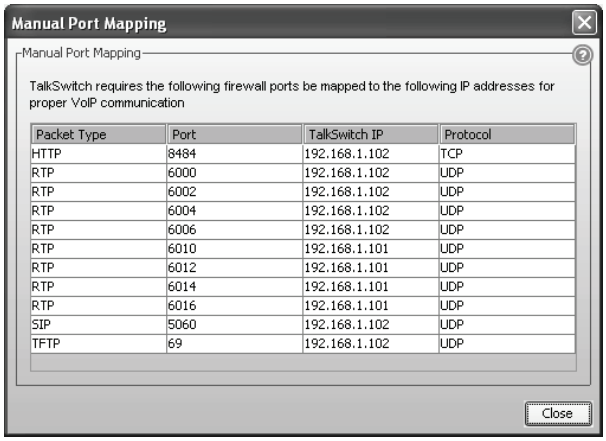
If you are setting up external IP extensions, a TalkSwitch VoIP network, or a VoIP service that doesn't handle port forwarding, port forwarding is required.

If port forwarding is required, and your router supports uPNP (Universal Plug and Play), ensure uPNP is enabled. The TalkSwitch system will use uPNP to automatically set up port forwarding, and the **Automatic (uPNP Enabled)** link will appear. No router configuration is required.

If port forwarding is required but your router doesn't support uPNP, or automatic port forwarding doesn't work, the **Manual Port Mapping Required** link will appear. You will need to configure the router as described below.

1. Select the **IP Configuration** page.

2. If required, click the **Manual Port Mapping Required** link. The **Manual Port Mapping** window appears. It lists the packet type, port number, IP address and protocol of each required port.


Manual Port Mapping
Manual Port Mapping
TalkSwitch requires the following firewall ports be mapped to the following IP addresses for proper VoIP communication
Packet Type | Port | TalkSwitch IP | Protocol
HTTP | 8484 | 192.168.1.102 | TCP
RTP | 6000 | 192.168.1.102 | UDP
RTP | 6002 | 192.168.1.102 | UDP
RTP | 6004 | 192.168.1.102 | UDP
RTP | 6006 | 192.168.1.102 | UDP
RTP | 6010 | 192.168.1.101 | UDP
RTP | 6012 | 192.168.1.101 | UDP
RTP | 6014 | 192.168.1.101 | UDP
RTP | 6016 | 192.168.1.101 | UDP
SIP | 5060 | 192.168.1.102 | UDP
TFTP | 69 | 192.168.1.102 | UDP
Close

3. To access the router configuration:

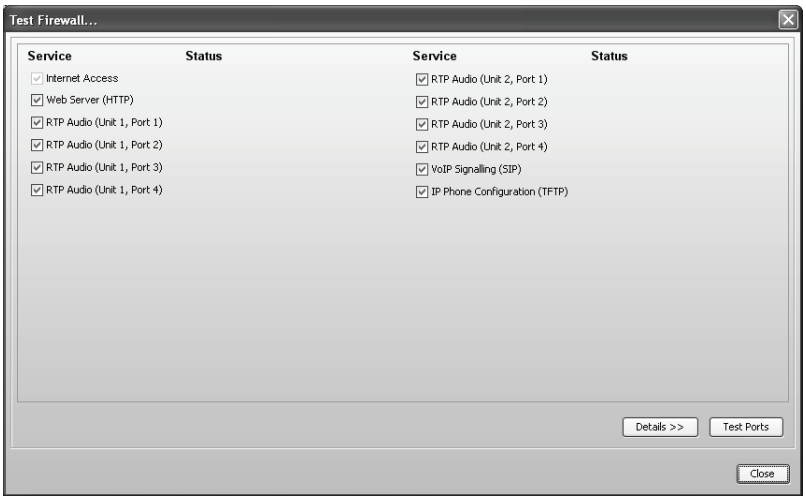
   a) Click the link containing the IP address of the gateway. The default browser starts, and prompts you for the router's user name and password.

   b) Enter the router's user name and password. The browser shows a setup screen.

   c) Navigate to the screen used to set up port forwarding. See your router documentation.

   d) Set up port forwarding using the information from the **Manual Port Mapping** window. See your router documentation for instructions on how to map ports. For information on configuring routers and mapping ports, visit **www.portforward.com/english/routers/port_forwarding/routerindex.htm**.

4. To check the status of each port through the firewall, click **Check Firewall**. The **Test Firewall** window appears.



5. Select the services you want to check.

6. Click **Test Ports**. The system will check the ports for the selected services.

Configuring the router manually

If you cannot access the router configuration through the **IP Configuration** page, configure the router manually.

1. Open the router configuration and navigate to the screen used to set up port forwarding. See your router documentation.
2. Map port 5060 (Type: UDP) to the TalkSwitch unit acting as local proxy. Port 5060 is the default port for forwarding SIP signaling data to the TalkSwitch system.

   If required, you can map a different port. In this case, enter the port in the *SIP signalling port* box of the **VoIP Settings** window.
3. Map the following ports (Type: UDP) to the TalkSwitch units. These RTP ports forward voice traffic to the TalkSwitch system by default.

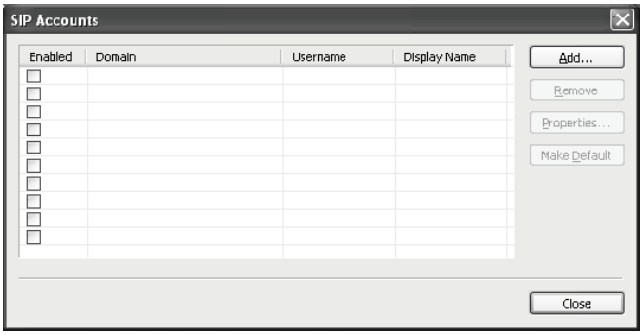
VoIP Lines/Unit	Unit 1	Unit 2	Unit 3	Unit 4
4	6000–6006	6010–6016	6020–6026	6030–6036
8	6100–6114	6200–6214	6300–6314	6400–6414

   If required, you can map different ports. In this case enter the first port in the *Starting RTP port* box of the **VoIP Settings** window.
4. Map port 69 (Type: UDP) to the TalkSwitch unit acting as local proxy. Port 69 allows the TalkSwitch system to configure external IP extensions.
5. Map port 9393 (Type: TCP) to the TalkSwitch unit acting as local proxy. Port 9393 allows remote configuration of the TalkSwitch system.
6. If available, enable Quality of Service (QoS) to give voice traffic priority over data.
7. Save the configuration to the router.

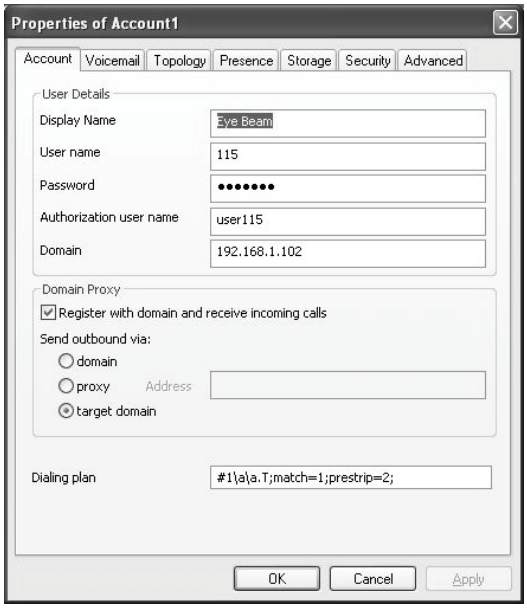
Configuring a new SIP account

The following procedure describes setting up the eyeBeam software to register on the network and to make itself available as a client for sending and receiving calls.

1. Install the eyeBeam software. The **SIP Accounts** window appears.



2. Click the **Add** button. The **Properties of Account1** window appears.



3. Enter the *User Details* in the *Account* tab.

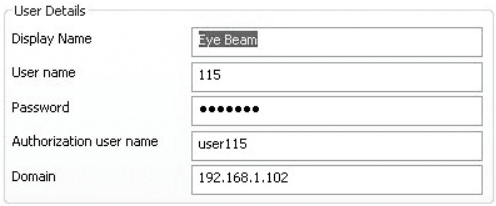
   a) Set the *Display Name* to the name for Caller ID.

   b) Set the *User name* to the local extension number.

   c) Set the *Password* to the *Password* set up in step 3 of *IP extension details area* on page 34.

   d) Set the *Authorization user name* to the *Username* set up in step 3 of *IP extension details area* on page 34.

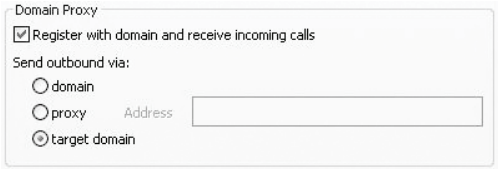
   e) If setting up an internal IP extension, set *Domain* to the IP address of the TalkSwitch unit acting as local proxy. If setting up an external IP extension, set *Domain* to the public IP address or FQDN (Fully Qualified Domain Name) of the TalkSwitch system.



4. Set up the *Domain Proxy* area in the *Account* tab.

   a) Select the *Register with domain and receive incoming calls* check box.

   b) Select the *target domain* option.



5. Set up the *Voicemail* tab.

    a) Select *Check for voice mail*.

    b) Enter ****** in the *Number to dial for checking voicemail* field.

    c) Enter ***<voicemail number>*** in the *Number for sending calls to voicemail* field.

6. Click **OK** to save settings and close the **Properties of Account1** window.

7. Click **Close** to close the **SIP Accounts** window and enable the newly configured SIP account. Once closed, the phone display will show:

    - Discovering network…
    - Registering…
    - Ready, Your username is: [local extension number].

Further configuration

The steps above will configure your Counterpath phone as a local extension.

See *Local Extension/Fax* in Chapter 2 of the *TalkSwitch User Guide* for instructions on configuring direct line access, hunt group permissions, Caller ID settings (VoIP only), call handling, and voicemail.

Updating eyeBeam software

The latest release of eyeBeam can be found at **www.counterpath.net/eyebeam.html**

ADDING OTHER IP PHONES

Other IP phones with the G.711 codec may work with TalkSwitch but not all features may be supported. We strongly recommend you use only the IP phones supported by TalkSwitch.

If you connect an unsupported IP phone, select *Other IP phone* as the *Type of phone*. As TalkSwitch cannot enable features, or customizations of these phones, further configuration will be limited to the programmable options on the IP phone itself.

Refer to the specific IP phone user guide's details for information on configuration.